

THE CLAIMS:

The claims in the case are as follows:

1-20 (cancelled).

21 (previously presented). A process for the production of acetic acid comprising carbonylating methanol and/or a reactive derivative thereof with carbon monoxide in a carbonylation reaction zone containing a liquid reaction composition comprising an iridium carbonylation catalyst, methyl iodide co-catalyst, a finite concentration of water, acetic acid, methyl acetate, at least one promoter selected from the group consisting of ruthenium, osmium and rhenium and a stabilizing compound selected from the group consisting of alkali metal iodides, alkaline earth metal iodides, metal complexes capable of generating I^- , salts capable of generating I^- , and mixtures of two or more thereof wherein the molar ratio of promoter to iridium is greater than 2 : 1, and the molar ratio of stabilizing compound to iridium is in the range greater than 0 : 1 to 5 : 1, except that when the stabilizing compound is a lithium compound the molar ratio of promoter to iridium is greater than 5 : 1 and the molar ratio of the lithium stabilizing compound to iridium is 0.05 : 1 to 5 : 1, such that loss of the catalyst and/or the promoter from the liquid reaction composition and/or subsequent process streams is reduced.

22 (previously presented). A process according to claim 21 wherein the process comprises the further steps of:

(a) withdrawing liquid reaction composition together with dissolved and/or entrained carbon monoxide and other gases from said carbonylation reaction zone;

(b) optionally passing said withdrawn liquid reaction composition through one or more further reaction zones to consume at least a portion of the dissolved and/or entrained carbon monoxide;

(c) passing said composition from step (a) and optional step (b) into one or more flash separation stages to form (i) a vapour fraction comprising condensable components and low pressure off-gas, the condensable components comprising acetic acid product and the low pressure off-gas comprising carbon monoxide and other gases dissolved and/or entrained with the withdrawn liquid carbonylation reaction composition and (ii) a liquid fraction comprising iridium carbonylation catalyst, promoter and acetic acid solvent;

(d) separating the condensable components from the low pressure off-gas; and

(e) recycling the liquid fraction from the flash separation stage to the carbonylation reactor.

23 (previously presented). A process according to claim 21 wherein the molar ratio of promoter : iridium is in the range greater than 2 : 1 to 15 : 1 and the stabilizing compound is not a lithium stabilizing compound.

24 (previously presented). A process according to claim 21 wherein the molar ratio of promoter : iridium is in the range greater than 2 : 1 to 5 : 1.

25 (previously presented). A process according to claim 23 wherein the molar ratio of promoter : iridium is in the range 4 : 1 to 10 : 1 and the stabilizing compound is not a lithium stabilizing compound.

26 (previously presented). A process according to claim 23 wherein the molar ratio of promoter : iridium is in the range 6 : 1 to 12 : 1.

27 (previously presented). A process according to claim 23 wherein the molar ratio of stabilizing compound : iridium is in the range 0.05 : 1 to 3 : 1.

28 (previously presented). A process according to claim 24 wherein the molar ratio of stabilizing compound : iridium is in the range 0.05 : 1 to 3 : 1.

29 (previously presented). A process according to claim 27 wherein the molar ratio of stabilizing compound : iridium is in the range 0.05 : 1 to 1.5 : 1.

30 (previously presented). A process according to claim 28 wherein the molar ratio of stabilizing compound : iridium is in the range 0.05 : 1 to 1.5 : 1.

31 (previously presented). A process according to claim 25 wherein the molar ratio of stabilizing compound : iridium is in the range 0.15 : 1 to 2.5 : 1.

32 (previously presented). A process according to claim 26 wherein the molar ratio of stabilizing the compound : iridium is in the range 0.15 : 1 to 2.5 : 1.

33 (previously presented). A process according to claim 31 wherein the molar ratio of stabilizing compound : iridium is in the range 0.15 : 1 to 2 : 1.

34 (previously presented). A process according to claim 32 wherein the molar ratio of stabilizing compound : iridium is in the range 0.15 : 1 to 2 : 1.

35 (previously presented). A process according to claim 21 wherein the stabilizing compound is selected from the group consisting of alkali metal iodide, alkaline earth metal iodide, alkali metal salts capable of generating iodide ions and alkaline earth metal salts capable of generating iodide ions.

36 (previously presented). A process according to claim 35 wherein the stabilizing compound is an alkali metal iodide or an alkali metal salt capable of generating iodide ions.

37 (previously presented). A process according to claim 36 wherein the stabilizing compound is selected from the group consisting of lithium iodide, lithium acetate, sodium iodide and sodium acetate.

38 (previously presented). A process according to claim 21 wherein the stabilizing compound is introduced directly into the reaction zone or is introduced indirectly into a reaction zone.

39 (previously presented). A process according to claim 38 wherein the stabilizing compound is introduced into the reaction zone via a recycle stream.

40 (previously presented). A process according to claim 39 wherein the recycle stream is a catalyst recycle stream.

41 (previously presented) A process according to claim 22, wherein the stabilizing compound is added to the one or more further reaction zones.

42(previously presented) A process according to claim 22, wherein the stabilizing compound is added to the liquid fraction from the flash separation stage.